evidence of petroleum contamination of the Branch was evident. One small sheen was observed in a 1 x 2 foot pool along the bank of the Branch, but no seepage from the bank was evident. The sheen appeared to be a bi-product of leaves that were rotting in the stagnant pool.

Municipal water serves most of the relative area including Rossi Buick and adjacent establishments.

Several supply wells are located within a one mile radius of the site, but none of the wells would appear to be at risk from the residual subsurface contamination at the site. The closest well serves the RMC Mobil Home Park approximately 1/8 north of the site. This well along with several private bedrock wells are located upgradient from the site. The Berlin water system is southwest of the site and consists of three springs at an elevation in excess of 900 feet above sea level. Three supply wells are also in this area and serve the Berlin Convalescent Home. The tops of the wells are at an elevation above 1,000 feet above sea level. It is highly likely that these systems are upgradient from the alluvial valley to the northeast were Rossi Buick is located. One supply well is located 3/4 mile down-gradient in the Steven's Branch valley and serves the Berlin Mobil Home Park. The well is drilled in bedrock. The distance of this well from Rossi Buick makes impact to the well from residual petroleum at the site remote.

IV. CONCLUSIONS

On the basis of this investigation, Griffin has concluded the following:

1) There has been a release or releases of petroleum at this site. The amounts and duration of the release(s) are unknown.

2) The source of the release has not been determined. The BTEX compounds detected in MW4 along with the odor apparent during the tank pull suggest gasoline may be a contaminant. The lack of significant MTBE contamination (MTBE has been used in production of most gasoline since approximately 1980) along with the relatively low level of BTEX contaminants present, may indicate gasoline contamination occurred prior to 1973 when the tanks were used for gasoline storage.

3) The two tanks removed from the contaminated area were in good shape with no detectable flaws or defects. Gasoline contamination is commonly the result leaks in the piping leading to the pumps associated with USTs. The data collected suggests this may have occurred at this site in the past.

4) Soils at this site consist of interbedded alluvial sands, silty sands, and silts. Groundwater apparently flows east at a gradient of 0.2 percent. The low hydraulic gradient may slow the rate of groundwater flow at this site which reduces the threat of impact to the Steven's Branch.

REPORT ON THE PHASE II ENVIRONMENTAL RISK ASSESSMENT AND INVESTIGATION OF SUBSURFACE PETROLEUM CONTAMINATION

AT

ROSSI BUICK - OLDSMOBILE, INC.
BARRE - MONTPELIER ROAD
BERLIN, VERMONT

VT DEC SITE #93-1466

DECEMBER 1993

PREPARED FOR:

PIERINO AND ISABELLA ROSSI
15 SKYLARK TERRACE
BARRE, VT 05641

PREPARED BY:

Griffin International Inc.
2B Dorset Lane
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(802) 879-7708

Griffin Project #993547

TABLE OF CONTENTS

I. INTRODUCTION

This report describes the Phase II environmental risk assessment and investigation of residual subsurface petroleum contamination at Rossi Buick - Oldsmobile located in Berlin, VT.

The investigation was conducted by Griffin International Inc. (Griffin) for Pierino and Isabella Rossi of Barre, VT. This investigation was requested by the State of Vermont Department of Environmental Conservation (VTDEC) in a letter from Chuck Schwer dated October 4, 1993.

The site (VTDEC Site #93-1466) is located in a mixed commercial, residential, and wooded area on the Barre - Montpelier Road (US. Rt. 302 east) in Berlin, VT about half way between Barre and Montpelier (See location map in Appendix A.).

The site lies on the flood plain of the Steven's Branch of the Winooski River at an approximate elevation of 560 feet above sea level.

The Rossi Buick -Oldsmobile property was purchase by Mr. Rossi in 1970. At that time two underground storage tanks (USTs) and pumps were used for the retail sale of gasoline. In 1973, the use of the tanks for gasoline sales ceased, and the pumps were removed. The tanks, located in front of the showroom under a paved area, were then used for the storage of waste oil generated by the establishment until 1987. These two tanks were removed under the supervision of Griffin on September 1, 1993. The tanks were in good shape with no noticeable defects. During the removal, contamination was present in the soils and a sheen was noticed on the water which collected in the tank pit. The soils had a noticeable gasoline odor.

Griffin conducted a phase I environmental risk assessment in September 1993 in which it was recommended to determine the degree and extent of subsurface petroleum contamination at the site. This report describes the investigation.

Remaining USTs at the site are: one 5,000 gal. capacity UST used for the storage of heating oil and installed prior to 1970, one 1,000 gal. capacity UST installed in 1980 and used for the storage of heating oil, and one 4,000 gal. capacity UST installed in 1980 and used for the storage of gasoline. Three monitoring wells (MW1, MW2, and, MW3) were installed in March 1993 for the purpose of leak detection in the vicinity of the three USTs.

II. INVESTIGATIVE PROCEDURES

In order to better define the extent of subsurface petroleum contamination at the site, Griffin installed three additional monitoring wells in the area of the former USTs. The locations of the wells are indicated on the Site Map in Appendix A. Depths to groundwater were measured in all six on-site wells, and then water samples were collected from the three new monitoring wells and the closest upgradient old monitoring well for laboratory analysis. Soil samples collected from boreholes of the new monitoring wells were screened for volatile organic compounds (VOCs) with a photo ionization detector (PID). The bank and adjacent surface of the

Steven's Branch, located approximately 150 feet east and downgradient of the site, was screened using a PID and visually inspected for a distance of 300 feet of its length.

A. Monitoring Well Installation

Three monitoring wells (MW4, MW5, and MW6) were installed on November 4 and November 8, 1993 by Green Mountain Boring Co. of Barre, VT under the direct supervision of a Griffin geologist. MW4 was installed in the former USTs' backfilled pit. MW5 was installed downgradient from the former tank pit, and MW6 was installed on-site south of the former tank pit.

The wells were installed using a truck mounted hollow stem auger. The wells are constructed of two inch diameter, 0.010" slot, PVC well screen and attached solid PVC riser. The annulus between the borehole wall and the screened section of each well is filled with sand pack to filter fine sediments from the groundwater entering the well. Approximately one foot above the screened section of each well, the annulus between the borehole wall and the riser is filled with a bentonite clay seal to prevent surface water from entering the borehole. Each well is protected at the surface by locking well cap, flush mounted steel well head protective casing, and a bolt down cover. Each well head protection casing is set in cement. Well construction details are listed on the well logs in Appendix B.

B. Soil Boring and Screening

Soil samples were collected at five foot intervals from the borings of MW4, MW5, and MW6 using a split spoon. Samples were screened for VOCs using a PID and logged by the geologist. Subsurface materials encountered in the borings consisted of interbedded alluvial sands, silty sands, and silts. Elevated VOC concentration were detected in the soils from the boring of MW4 ranging from 245 to 900 ppm throughout the hole. Elevated VOC concentrations were detected in the MW5 boring concentrated in a 6 inch thick sand layer from 6.5 to 7 feet below the surface. No significant VOC concentrations were detected in the soils from the boring of MW6. Detailed lithologic descriptions and VOC concentrations are listed on the well logs in Appendix B.

C. Water Table Measurements And Groundwater Flow

The water table elevation in each monitoring well was measured on November 15, 1993. The water table elevations are based on an arbitrary datum by assigning an elevation of 100 feet to the top of the MW1 well casing. Elevations are plotted on the Groundwater Contour Map in Appendix A. The map indicates that groundwater is flowing west. The average hydraulic gradient in the vicinity of the monitoring wells is calculated to be 0.2 percent. This low gradient likely aids in restricting groundwater flow rates at this site.

No free product was detected in any of the monitoring wells. All groundwater level data are recorded on the Liquid Level Table in Appendix C.

D. Groundwater Sampling and Analysis

On November 15, 1993, Griffin collected groundwater samples from the new monitoring wells MW4, MW5, and MW6. A sample was also collected from MW1, the closest leak detection monitoring well to the former tank pit, for upgradient data. Laboratory results are summarized below in Table 1. Laboratory report forms are presented in Appendix D. All samples collected were analyzed for VOCs according to EPA method 602. MW4 and MW5 were resampled on December 14, 1993. The samples were analyzed by EPA method 8240. All samples were collected according to Griffin's groundwater sampling protocol. Duplicate, trip blank, and equipment blank samples collected during the sampling indicate that adequate quality assurance/quality control was maintained during sample collection and analysis.

Analysis of the water sample collected from MW1 detected 63.4 parts per billion (ppb) methyl tertiary butyl ether (MTBE), an anti-knock additive used in the production of gasoline since 1979. MW1 is not an environmental well. The well is bailed weekly to check for tank leakage. The road box of MW1 has been apparently detached from the surface with a snow plow. The road box was cemented back in place on November 4. It is likely that surface runoff contamination could have impacted water in the well.

Analysis of the sample collected on November 15, 1993 from MW4 indicated benzene, ethylbenzene, toluene, and xylenes (components of gasoline collectively termed "BTEX") at a total concentration of 814 ppb. Benzene was the only contaminant detected above the Vermont Groundwater Enforcement Standard (VGES). The concentration of benzene was 42.2 ppb; the VGES for benzene is 5.0 ppb. Analysis of the sample collected on December 14, 1993 indicated benzene in concentration of 68.8 ppb. No contaminants other than BTEX compounds and 3.9 ppb of MTBE were detected by EPA Method 6240.

Analysis of the water sample collected on November 15, 1993 from MW5 indicated 71.1 ppb of benzene in concentration above VGES. Ethylbenzene and xylenes were present in concentrations below VGES. No MTBE was detected. Analysis of the water sample collected on December 14, 1993 indicated benzene in concentration of 68.8 ppb. No contaminants other than BTEX compounds were detected by EPA Method 6240. 8240

Analysis of the water sample from MW6 indicated no detectable contaminants.

III. RECEPTOR SURVEY AND RISK ASSESSMENT

Griffin conducted a visual survey of the site to identify local potential receptors of any subsurface petroleum contaminants. The most likely receptor in the vicinity of this site appears to be Steven's Branch. However, the low hydraulic gradient in the area and the distance of the Branch from the site make significant impact from residual subsurface contamination remote.

On November 4, 1993, Griffin conducted screening for VOCs of the storm drains at the site leading to Steven's Branch using a PID. A 300 ft. length of the bank of the Steven's Branch down gradient from the former USTs' location was screened. No VOCs were detected and no

Groundwater Quality Summary
Rossi Buick
Berlin, Vermont

Monitoring Well 1

All Values Reported in ug/L (ppb)

PARAMETER	Date of Sample Collection				V.G.E.S.
	11/15/93	12/14/93			
Benzene	ND	NS			5.0*
Chlorobenzene	ND	NS			100**
1,2-DCB	ND	NS			-
1,3-DCB	ND	NS			-
1,4-DCB	ND	NS			-
Ethylbenzene	ND	NS			680**
Toluene	ND	NS			2,420**
Xylenes	ND	NS			400**
Total BTEX	ND	NS			-
MTBE	63.4	NS			40**
BTEX + MTBE	63.4	NS			-

Monitoring Well 4

PARAMETER	Date of Sample Collection				V.G.E.S.
	11/15/93	12/14/93			
Benzene	42.2	12.7			5.0*
Chlorobenzene	ND	ND			100**
1,2-DCB	ND	ND			-
1,3-DCB	ND	ND			-
1,4-DCB	ND	ND			-
Ethylbenzene	59.7	27.1			680**
Toluene	348	30.7			2,420**
Xylenes	364	241			400**
Total BTEX	813.9	311.5			-
MTBE	ND	ND			40**
BTEX + MTBE	813.9	311.5			-

Monitoring Well 5

PARAMETER	Date of Sample Collection				V.G.E.S.
	11/15/93	12/14/93			
Benzene	71.1	68.8			5.0*
Chlorobenzene	ND	ND			100**
1,2-DCB	ND	ND			-
1,3-DCB	ND	ND			-
1,4-DCB	ND	ND			-
Ethylbenzene	285	215			680**
Toluene	ND	2.7			2,420**
Xylenes	108	256.			400**
Total BTEX	464	543.			-
MTBE	ND	3.9			40**
BTEX + MTBE	464	546.			-

V.G.E.S. - Vermont Groundwater Enforcement Standards

* - Maximum Contaminant Level

** - Health Advisory Level

ND - None Detected

TBQ - Trace, below quantitation limits

12/14/93 BY EPA METHOD 8240; ALL OTHERS BY EPA METHOD 602

Groundwater Quality Summary
Rossi Buick
Berlin, Vermont

Monitoring Well 6

All Values Reported in ug/L (ppb)

PARAMETER	Date of Sample Collection				V.G.E.S.
	11/15/93	12/14/93			
Benzene	ND	NS			5.0*
Chlorobenzene	ND	NS			100**
1,2-DCB	ND	NS			-
1,3-DCB	ND	NS			-
1,4-DCB	ND	NS			-
Ethylbenzene	ND	NS			680**
Toluene	ND	NS			2,420**
Xylenes	ND	NS			400**
Total BTEX	ND	NS			-
MTBE	ND	NS			40**
BTEX + MTBE	ND	NS			-

V.G.E.S. - Vermont Groundwater Enforcement Standards

* - Maximum Contaminant Level

** - Health Advisory Level

ND - None Detected

TBQ - Trace, below quantitation limits

ANALYSIS BY EPA METHOD 602

evidence of petroleum contamination of the Branch was evident. One small sheen was observed in a 1 x 2 foot pool along the bank of the Branch, but no seepage from the bank was evident. The sheen appeared to be a bi-product of leaves that were rotting in the stagnant pool.

Municipal water serves most of the relative area including Rossi Buick and adjacent establishments.

Several supply wells are located within a one mile radius of the site, but none of the wells would appear to be at risk from the residual subsurface contamination at the site. The closest well serves the RMC Mobil Home Park approximately 1/8 north of the site. This well along with several private bedrock wells are located upgradient from the site. The Berlin water system is southwest of the site and consists of three springs at an elevation in excess of 900 feet above sea level. Three supply wells are also in this area and serve the Berlin Convalescent Home. The tops of the wells are at an elevation above 1,000 feet above sea level. It is highly likely that these systems are upgradient from the alluvial valley to the northeast were Rossi Buick is located. One supply well is located 3/4 mile down-gradient in the Steven's Branch valley and serves the Berlin Mobil Home Park. The well is drilled in bedrock. The distance of this well from Rossi Buick makes impact to the well from residual petroleum at the site remote.

IV. CONCLUSIONS

On the basis of this investigation, Griffin has concluded the following:

1) There has been a release or releases of petroleum at this site. The amounts and duration of the release(s) are unknown.

2) The source of the release has not been determined. The BTEX compounds detected in MW4 along with the odor apparent during the tank pull suggest gasoline may be a contaminant. The lack of significant MTBE contamination (MTBE has been used in production of most gasoline since approximately 1980) along with the relatively low level of BTEX contaminants present, may indicate gasoline contamination occurred prior to 1973 when the tanks were used for gasoline storage.

3) The two tanks removed from the contaminated area were in good shape with no detectable flaws or defects. Gasoline contamination is commonly the result leaks in the piping leading to the pumps associated with USTs. The data collected suggests this may have occurred at this site in the past.

4) Soils at this site consist of interbedded alluvial sands, silty sands, and silts. Groundwater apparently flows east at a gradient of 0.2 percent. The low hydraulic gradient may slow the rate of groundwater flow at this site which reduces the threat of impact to the Steven's Branch.

5) No impact from petroleum contamination was evident along the bank or on the surface of Steven's Branch. Supply wells in the area do not appear to be at risk from residual petroleum contamination at Rossi Buick.

6) Well MW1 contained MTBE in concentration slightly above VGES. The well is up-gradient from the former waste oil tanks. Contamination may have entered this well from the surface.

7) Samples collected from MW4 and MW5 contained benzene in concentrations above VGES.

8) No free product was evident at this site.

V RECOMMENDATIONS

On the basis of the above conclusions, Griffin recommends the following:

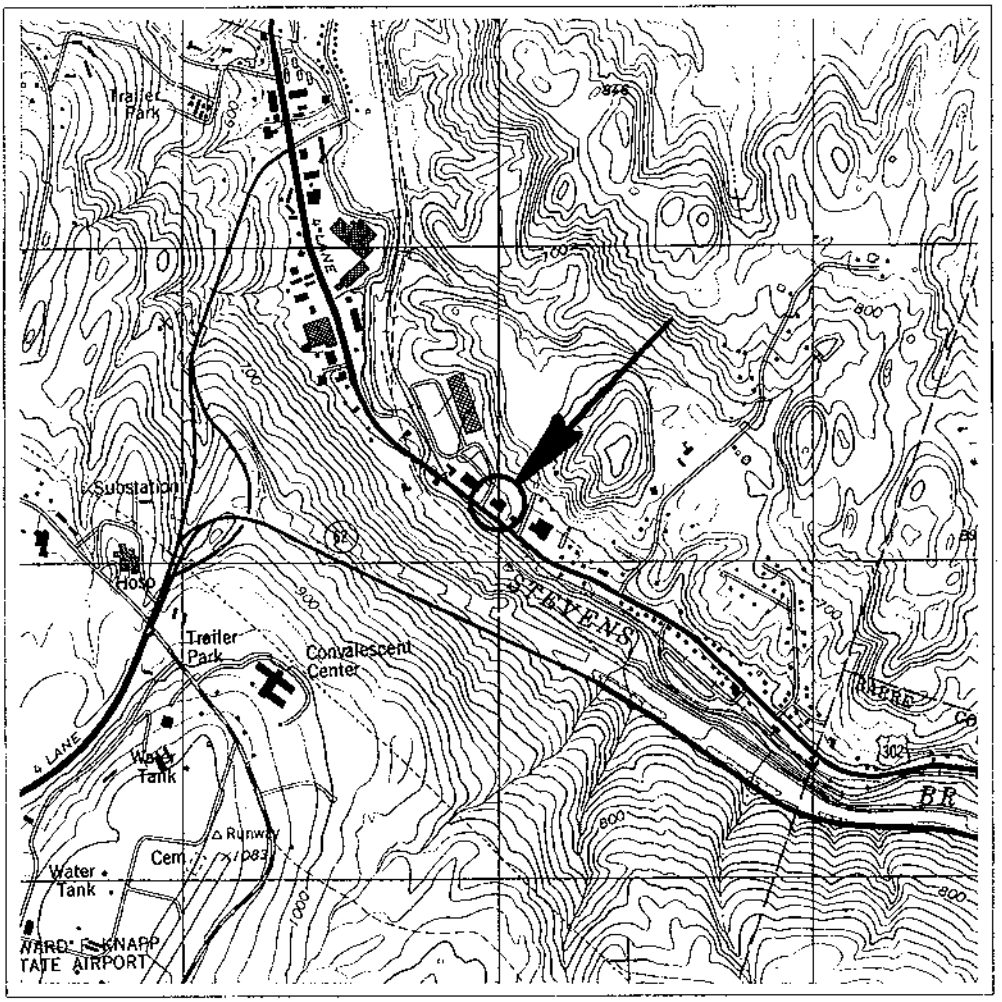
1) Because of the presence of benzene in concentration which exceeds VGES in two monitoring wells at the site, MW4 and MW5 should be sampled again in one year and analyzed by EPA method 602 to establish a downward trend of contaminant concentration.

2) The Steven's Branch should be inspected at the time of sampling.

3) Active remediation at this site is not recommended.

APPENDIX A

SITE LOCATION MAP
SITE MAP
GROUNDWATER CONTOUR MAP



N

JOB #: 993547

SOURCE: USGS

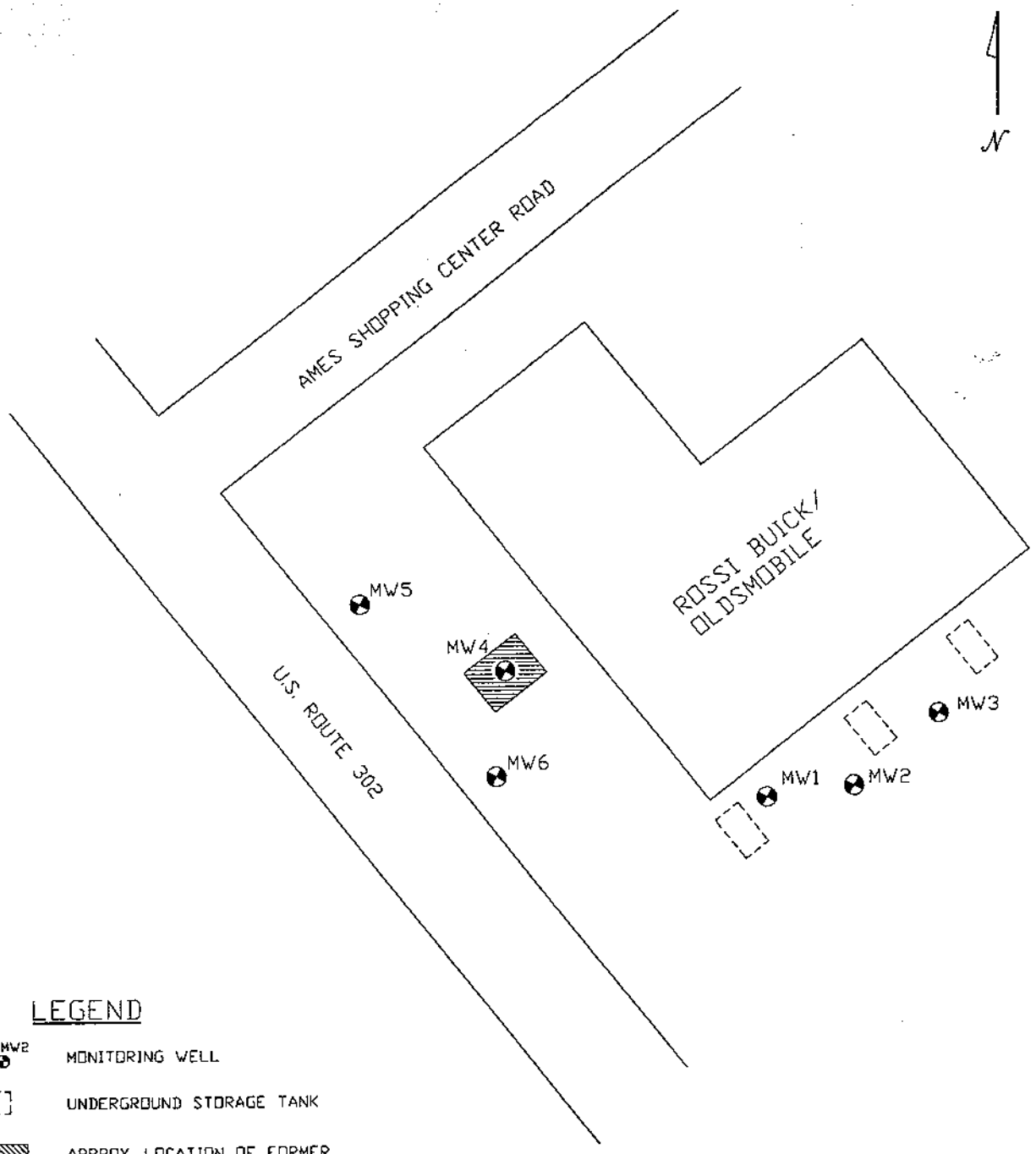
GRIFFIN INTERNATIONAL INC

ROSSI BUICK / OLDSMOBILE

BERLIN, VERMONT

SITE LOCATION MAP

DATE: 11/10/93	DWG.#: 1	SCALE: 1 : 24000	DRN.: SB	APP.: LR



LEGEND

MW2 MONITORING WELL

UNDERGROUND STORAGE TANK

APPROX. LOCATION OF FORMER WASTE OIL UST'S

JOB #: 993547

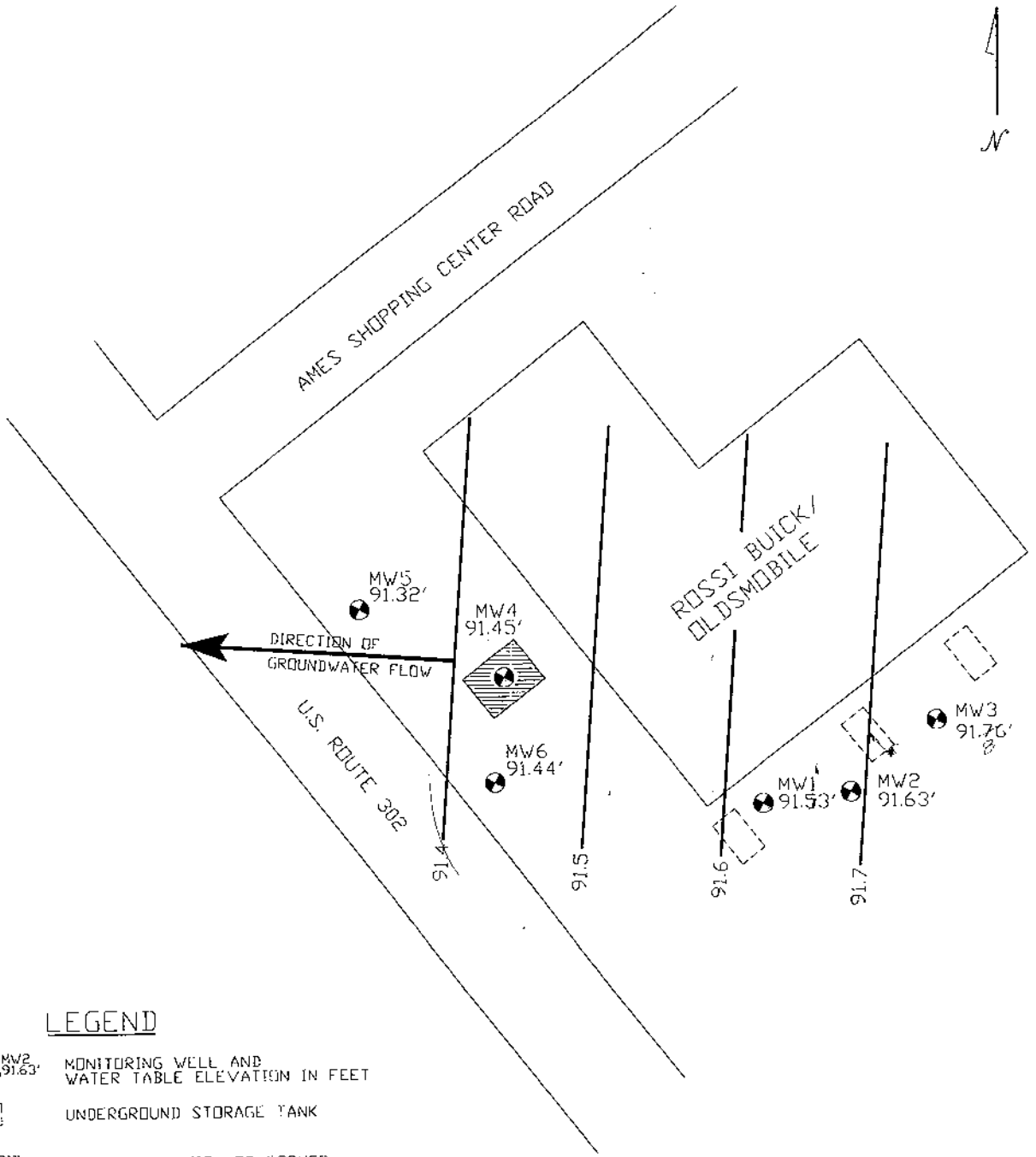
GRIFFIN INTERNATIONAL INC

ROSSI BUICK / OLDSMOBILE

BERLIN, VERMONT

SITE MAP

DATE: 11/10/93	DWG.#: 2	SCALE: 1"= 50'	DRN.: SB	APP.: LR



LEGEND

MW2 91.63' — MONITORING WELL AND WATER TABLE ELEVATION IN FEET

UNDERGROUND STORAGE TANK

APPROX. LOCATION OF FORMER WASTE OIL UST'S

91.6 — GROUNDWATER CONTOUR

JOB #: 993547

SAMPLE DATE: 11/15/93

GRIFFIN INTERNATIONAL INC

ROSSI BUICK / OLDSMOBILE

BERLIN, VERMONT

GROUNDWATER CONTOUR MAP

DATE: 11/10/93	DWG.#: 3	SCALE: 1"= 50'	DRN.: SB	APP.: LR

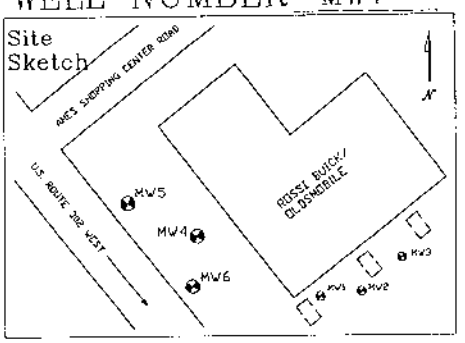
APPENDIX B

DRILLING LOGS

WELL NUMBER MW4

PROJECT ROSSI BUICK / OLDSMOBILE
LOCATION RTE. 302 BERLIN, VERMONT
DATE DRILLED 11/4/93 TOTAL DEPTH OF HOLE 12.5'
DIAMETER
SCREEN DIA. 2" LENGTH 10' SLOT SIZE 0.020"
CASING DIA. 2" LENGTH 1'-8" TYPE sch 40 pvc
DRILLING CO. GMB DRILLING METHOD HSA
DRILLER R. FINKLE LOG BY L. REED

Site Sketch



GRIFFIN INTERNATIONAL, INC

DEPTH IN FEET	WELL CONSTRUCTION	NOTES	BLOWS PER 6" OF SPOON & PID READINGS	DESCRIPTION/SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)	DEPTH IN FEET
0		ROAD BOX LOCKING WELL CAP CONCRETE			0
1		NATIVE BACKFILL			1
2		BENTONITE	0' - 5' 600 ppm	Dark brown SAND and GRAVEL FILL, strong petroleum odor	2
3					3
4		WELL RISER			4
5					5
6			5'-7'- 5,8,10,12 900 ppm	Fine SAND FILL with some gravel and pebbles, dark brown, slightly damp, strong petroleum odor, petroleum stains	6
7		SAND PACK			7
8				7.0' WATER TABLE	8
9		WELL SCREEN			9
10			10' 450 ppm	Very dark brown SAND w/pebbles, very wet with visable product (oil)	10
11					11
12		BOTTOM CAP	10'-12' 245 ppm	Wet,fine to coarse SAND w/silt dark brown	12
13		UNDISTURBED NATIVE SOIL	12'	Oil stained silty SAND copper & brown layers	13
14				END OF EXPLORATION AT 12.5'	14
15					15
16					16
17					17
18					18
19					19
20					20
21					21
22					22
23					23
24					24
25					25

WELL NUMBER MW5

PROJECT ROSSI BUICK / OLDSMOBILE

LOCATION RTE. 302 BERLIN, VERMONT

DATE DRILLED 11/8/93 TOTAL DEPTH OF HOLE 16'

DIAMETER

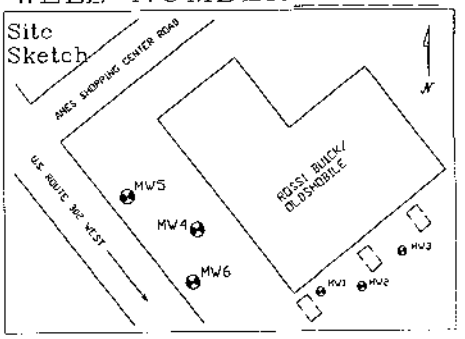
SCREEN DIA. 2" LENGTH 10' SLOT SIZE 0.020"

CASING DIA. 2" LENGTH 3' TYPE sch 40 pvc

DRILLING CO. GMB DRILLING METHOD HSA

DRILLER GARNEAU LOG BY L. REED

Site Sketch



GRIFFIN INTERNATIONAL, INC

DEPTH IN FEET	WELL CONSTRUCTION	NOTES	BLOWS PER 6" OF SPOON & PID READINGS	DESCRIPTION/SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)	DEPTH IN FEET
0		ROAD BOX LOCKING WELL CAP CONCRETE		Asphalt	0
1		NATIVE BACKFILL BENTONITE	0.3'–2.5'	Dark brown SAND and GRAVEL construction fill	1
2					2
3			3.0' 4.7 ppm	Dark brown silty SAND w/small rounded pebbles, slight petroleum odor sample off auger flights at 3" slightly damp	3
4		WELL RISER			4
5				Brown CLAY w/silt, dry & dense, no odor	5
6		SAND PACK	5'–7'– 10,9,11,21 228 ppm	Light brown silty SAND, damp, slight odor	6
7		WELL SCREEN		White QUARTZ, SAND angular with black mica, strong petroleum odor, damp	7
8					8
9				9.0' WATER TABLE	9
10					10
11			10'–12'– 19,4,3,4 8.3 ppm		11
12				Oil stained very dark brown med./coarse SAND with silt and rounded qtz. pebbles very wet, visible oil product	12
13		BOTTOM CAP			13
14					14
15			14'–16'– 1,1,4,4 6.0 ppm	Very wet dark gray SILT, slight odor	15
16		UNDISTURBED NATIVE SOIL		END OF EXPLORATION AT 16'	16
17					17
18					18
19					19
20					20
21					21
22					22
23					23
24					24
25					25

WELL NUMBER MW6

PROJECT ROSSI BUICK / OLDSMOBILE

LOCATION RTE. 302 BERLIN, VERMONT

DATE DRILLED 11/8/93 TOTAL DEPTH OF HOLE 16'

DIAMETER

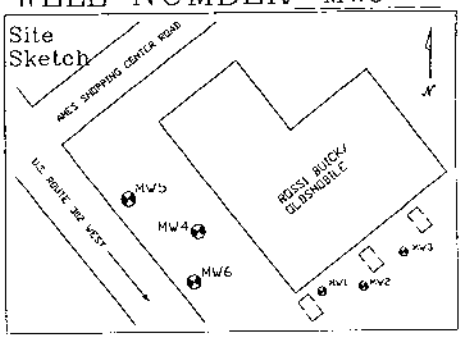
SCREEN DIA. 2" LENGTH 10' SLOT SIZE 0.020"

CASING DIA. 2" LENGTH 3.5' TYPE sch 40 pvc

DRILLING CO. GMB DRILLING METHOD HSA

DRILLER GARNEAU LOG BY L. REED

Site Sketch



GRIFFIN INTERNATIONAL, INC

DEPTH IN FEET	WELL CONSTRUCTION	NOTES	BLOWS PER 6" OF SPOON & PID READINGS	DESCRIPTION/SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)	DEPTH IN FEET
0		ROAD BOX LOCKING WELL CAP			0
0		CONCRETE		Asphalt	0
1		NATIVE BACKFILL	0.3'–2.5'	SAND and GRAVEL fill with angular gravel, no odor, slightly damp, brown	1
2					2
3		BENTONITE	2.5'–4.0' 6.0 ppm	Dark brown silty SAND w/rounded pebbles slightly damp, no odor	3
4		WELL RISER	4.0'–6.0' 5.1 ppm	Silty CLAY, dark brn, very damp, no odor	4
5				Silty fine SAND with 5 % rounded pebbles, dark brown, slightly damp no odor	5
6		SAND PACK	5.0'–7.0'– 10,10,9,7 4.9 ppm		6
7					7
8		WELL SCREEN			8
9				9.0' WATER TABLE	9
10					10
11			10'–12'– 10,7,10,10 5.0 ppm	Wet med. to coarse dark brown SAND, with rounded pebbles, very wet	11
12					12
13		BOTTOM CAP			13
14					14
15			14'–16'– 6,7,7,6 5.9 ppm	Dark gray SILT, wet, no odor	15
16		UNDISTURBED NATIVE SOIL		END OF EXPLORATION AT 16'	16
17					17
18					18
19					19
20					20
21					21
22					22
23					23
24					24
25					25

APPENDIX C

WATER LEVEL DATA

Liquid Level Monitoring Data
Rossi Buick
Berlin, Vermont

Monitoring Date: 11/15/93

Well I.D.	Well Depth	Top of Casing Elevation	Depth To Product	Depth To Water	Product Thickness	Specific Gravity Of Product	Hydro Equivalent	Corrected Depth To Water	Corrected Water Table Elevation
MW-1	NA	100.00	-	8.47	-	-	-	8.47	91.53
MW-2	NA	99.74	-	8.11	-	-	-	8.11	91.63
MW-3	NA	98.57	-	6.81	-	-	-	6.81	91.76
MW-4	12.50	98.73	-	7.28	-	-	-	7.28	91.45
MW-5	14.00	99.38	-	8.06	-	-	-	8.06	91.32
MW-6	14.00	99.85	-	8.14	-	-	-	8.14	91.71

All Values Reported in feet
Elevations are based on Arbitrary Datum
NA - Not Available

APPENDIX D

LABORATORY RESULTS

ENDYNE, INC.

Laboratory Services

32 James Brown Drive
Williston, Vermont 05495
(802) 879-4333
FAX 879-7103

REPORT OF LABORATORY ANALYSIS

CLIENT: Griffin International
PROJECT NAME: Rossi Buick
REPORT DATE: November 30, 1993
DATE SAMPLED: November 15, 1993

PROJECT CODE: GIRB1285
REF.#: 54,084 - 54,090

Enclosed please find the results of the analyses performed for the samples referenced on the attached chain of custody. Chain of custody indicated samples were preserved with HCl.

All samples were prepared and analyzed by requirements outlined in the referenced method and within the specified holding times. All instrumentation was calibrated with the appropriate frequency and verified by the requirements outlined in the referenced method. Blank contamination was not observed at levels affecting the analytical results.

Analytical method precision and accuracy was monitored by laboratory control standards which included matrix spike, duplicate and quality control analyses. These standards were determined to be within established laboratory method acceptance limits.

Individual sample performance was monitored by the addition of surrogate analytes to each sample. All surrogate recovery data was determined to be within laboratory QA/QC guidelines unless otherwise noted.

Reviewed by,

Harry B. Locker, Ph.D.
Laboratory Director

enclosures

ENDYNE, INC.

Laboratory Services

32 James Brown Drive
Williston, Vermont 05495
(802) 879-4333
FAX 879-7103

LABORATORY REPORT

EPA METHOD 602--PURGEABLE AROMATICS

CLIENT: Griffin International
PROJECT NAME: Rossi Buick
REPORT DATE: November 30, 1993
DATE SAMPLED: November 15, 1993
DATE RECEIVED: November 15, 1993
ANALYSIS DATE: November 25, 1993

PROJECT CODE: GIRB1285
REF.#: 54,084
STATION: MW-1
TIME SAMPLED: 11:35
SAMPLER: J. Bernhard

Parameter	Detection Limit (ug/L)	Concentration (ug/L)
Benzene	1	ND[1]
Chlorobenzene	1	ND
1,2-Dichlorobenzene	1	ND
1,3-Dichlorobenzene	1	ND
1,4-Dichlorobenzene	1	ND
Ethylbenzene	1	ND
Toluene	1	ND
Xylenes	1	ND
MTBE	10	64.3

Bromobenzene Surrogate Recovery: 102%

NUMBER OF UNIDENTIFIED PEAKS FOUND: 0

NOTES:
1 None detected

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LABORATORY REPORT

EPA METHOD 602--PURGEABLE AROMATICS

CLIENT: Griffin International
PROJECT NAME: Rossi Buick
REPORT DATE: November 30, 1993
DATE SAMPLED: November 15, 1993
DATE RECEIVED: November 15, 1993
ANALYSIS DATE: November 25, 1993

PROJECT CODE: GIRB1285
REF.#: 54,085
STATION: MW-6
TIME SAMPLED: 11:55
SAMPLER: J. Bernhard

Parameter	Detection Limit (ug/L)	Concentration (ug/L)
Benzene	1	ND[1]
Chlorobenzene	1	ND
1,2-Dichlorobenzene	1	ND
1,3-Dichlorobenzene	1	ND
1,4-Dichlorobenzene	1	ND
Ethylbenzene	1	ND
Toluene	1	ND
Xylenes	1	ND
MTBE	10	ND

Bromobenzene Surrogate Recovery: 93%

NUMBER OF UNIDENTIFIED PEAKS FOUND: 10

NOTES:

1 None detected

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LABORATORY REPORT

EPA METHOD 602--PURGEABLE AROMATICS

CLIENT: Griffin International
PROJECT NAME: Rossi Buick
REPORT DATE: November 30, 1993
DATE SAMPLED: November 15, 1993
DATE RECEIVED: November 15, 1993
ANALYSIS DATE: November 29, 1993

PROJECT CODE: GIRB1285
REF.#: 54,086
STATION: MW-5
TIME SAMPLED: 12:15
SAMPLER: J. Bernhard

Parameter	Detection Limit (ug/L)[1]	Concentration (ug/L)
Benzene	50	71.1
Chlorobenzene	50	ND[2]
1,2-Dichlorobenzene	50	ND
1,3-Dichlorobenzene	50	ND
1,4-Dichlorobenzene	50	ND
Ethylbenzene	50	285.
Toluene	50	ND
Xylenes	50	108.
MTBE	500	ND

Bromobenzene Surrogate Recovery: 125%

NUMBER OF UNIDENTIFIED PEAKS FOUND: 15

NOTES:

1 Detection limit raised due to high levels of contaminants. Sample run at 2% dilution.

2 None detected

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LABORATORY REPORT

EPA METHOD 602--PURGEABLE AROMATICS

CLIENT: Griffin International
PROJECT NAME: Rossi Buick
REPORT DATE: November 30, 1993
DATE SAMPLED: November 15, 1993
DATE RECEIVED: November 15, 1993
ANALYSIS DATE: November 29, 1993

PROJECT CODE: GIRB1285
REF.#: 54,087
STATION: MW-4
TIME SAMPLED: 12:35
SAMPLER: J. Bernhard

Parameter	Detection Limit (ug/L)[1]	Concentration (ug/L)
Benzene	20	42.2
Chlorobenzene	20	ND[2]
1,2-Dichlorobenzene	20	ND
1,3-Dichlorobenzene	20	ND
1,4-Dichlorobenzene	20	ND
Ethylbenzene	20	59.7
Toluene	20	348.
Xylenes	20	364.
MTBE	200	ND

Bromobenzene Surrogate Recovery: 114%

NUMBER OF UNIDENTIFIED PEAKS FOUND: 13

NOTES:

1 Detection limit raised due to high levels of contaminants. Sample run at 5% dilution.

2 None detected

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LABORATORY REPORT

EPA METHOD 602--PURGEABLE AROMATICS

CLIENT: Griffin International
PROJECT NAME: Rossi Buick
REPORT DATE: November 30, 1993
DATE SAMPLED: November 15, 1993
DATE RECEIVED: November 15, 1993
ANALYSIS DATE: November 29, 1993

PROJECT CODE: GIRB1285
REF.#: 54,088
STATION: Trip Blank
TIME SAMPLED: 11:15
SAMPLER: J. Bernhard

Parameter	Detection Limit (ug/L)	Concentration (ug/L)
Benzene	1	ND[1]
Chlorobenzene	1	ND
1,2-Dichlorobenzene	1	ND
1,3-Dichlorobenzene	1	ND
1,4-Dichlorobenzene	1	ND
Ethylbenzene	1	ND
Toluene	1	ND
Xylenes	1	ND
MTBE	10	ND

Bromobenzene Surrogate Recovery: 98%

NUMBER OF UNIDENTIFIED PEAKS FOUND: 0

NOTES:
1 None detected

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LABORATORY REPORT

EPA METHOD 602--PURGEABLE AROMATICS

CLIENT: Griffin International
PROJECT NAME: Rossi Buick
REPORT DATE: November 30, 1993
DATE SAMPLED: November 15, 1993
DATE RECEIVED: November 15, 1993
ANALYSIS DATE: November 29, 1993

PROJECT CODE: GIRB1285
REF.#: 54,089
STATION: Equipment Blank
TIME SAMPLED: 12:45
SAMPLER: J. Bernhard

Parameter	Detection Limit (ug/L)	Concentration (ug/L)
Benzene	1	ND[1]
Chlorobenzene	1	ND
1,2-Dichlorobenzene	1	ND
1,3-Dichlorobenzene	1	ND
1,4-Dichlorobenzene	1	ND
Ethylbenzene	1	ND
Toluene	1	ND
Xylenes	1	ND
MTBE	10	ND

Bromobenzene Surrogate Recovery: 103%

NUMBER OF UNIDENTIFIED PEAKS FOUND: 0

NOTES:
1 None detected

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LABORATORY REPORT

EPA METHOD 602--PURGEABLE AROMATICS

CLIENT: Griffin International
PROJECT NAME: Rossi Buick
REPORT DATE: November 30, 1993
DATE SAMPLED: November 15, 1993
DATE RECEIVED: November 15, 1993
ANALYSIS DATE: November 29, 1993

PROJECT CODE: GIRB1285
REF.#: 54,090
STATION: Duplicate (MW-4)
TIME SAMPLED: 12:35
SAMPLER: J. Bernhard

Parameter	Detection Limit (ug/L)[1]	Concentration (ug/L)
Benzene	20	44.6
Chlorobenzene	20	ND[2]
1,2-Dichlorobenzene	20	ND
1,3-Dichlorobenzene	20	ND
1,4-Dichlorobenzene	20	ND
Ethylbenzene	20	63.1
Toluene	20	368.
Xylenes	20	378.
MTBE	200	ND

Bromobenzene Surrogate Recovery: 123%

NUMBER OF UNIDENTIFIED PEAKS FOUND: 14

NOTES:

1 Detection limit raised due to high levels of contaminants. Sample run at 5% dilution.

2 None detected

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008423

CHAIN-OF-CUSTODY RECORD

Project Name: Rossi Buick Site Location: Berlin, VT	Reporting Address: Griffin	Billing Address: Griffin
Endyne Project Number: GIRB1285	Company: Griffin Contact Name/Phone #: 879-7708	Sampler Name: J. Bernard Phone #:

Lab #	Sample Location	Matrix	GRAB	COMP	Date/Time 11-15-93	Sample Containers No.	Sample Containers Type/Size	Field Results/Remarks	Analysis Required	Sample Preservation	Rush
54084	MW-1	H_2O	X		11:35	2	90ml		602	HCl	
54085	MW-6	↓	↓		11:55	↓	↓		↓	↓	
54086	MW-5	↓	↓		12:15	↓	↓		↓	↓	
54087	MW-4	↓			12:35	↓	↓		↓	↓	
54088	Trip Blank				11:15						
54089	Equipment Blank				12:45						
54090	Duplicate (MW-4)				12:35						
~~54091~~											

Relinguished by: Signature	Received by: Signature	Date/Time 11/15/93 1:55pm
Relinguished by: Signature	Received by: Signature	Date/Time

Requested Analyses

1	pH	6	TKN	11	Total Solids	16	Metals (Specify)	21	EPA 624	26	EPA 8270 B/N or Acid
2	Chloride	7	Total P	12	TSS	17	Coliform (Specify)	22	EPA 625 B/N or A	27	EPA 8010/8020
3	Ammonia N	8	Total Diss. P	13	TDS	18	COD	23	EPA 418.1	28	EPA 8080 Pest/PCB
4	Nitrite N	9	BOD_5	14	Turbidity	19	BTEX	24	EPA 608 Pest/PCB		
5	Nitrate N	10	Alkalinity	15	Conductivity	20	EPA 601/602	25	EPA 8240		
29	TCLP (Specify: volatiles, semi-volatiles, metals, pesticides, herbicides)										
30	Other (Specify):										

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REPORT OF LABORATORY ANALYSIS

CLIENT: Griffin International
PROJECT NAME: Rossi Buick
DATE REPORTED: December 16, 1993
DATE SAMPLED: December 14, 1993

PROJECT CODE: GIRB1542
REF. #: 55,077 - 55,078

Enclosed please find the results of the analyses performed for the samples referenced on the attached chain of custody record.

Chain of custody indicated sample preservation with HCl.

All samples were prepared and analyzed by requirements outlined in the referenced methods and within the specified holding times.

All instrumentation was calibrated with the appropriate frequency and verified by the requirements outlined in the referenced methods.

Blank contamination was not observed at levels affecting the analytical results.

Analytical method precision and accuracy was monitored by laboratory control standards which included matrix spike, duplicate and quality control analyses. These standards were determined to be within established laboratory method acceptance limits.

Individual sample performance was monitored by the addition of surrogate analytes to each sample. All surrogate data was determined to be within Laboratory QA/QC guidelines unless otherwise noted.

Reviewed by,

Harry B. Locker, Ph.D.
Laboratory Director

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Laboratory Services

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LABORATORY REPORT

EPA METHOD 8240 WATER MATRIX

CLIENT: Griffin International
PROJECT NAME: Rossi Buick
REPORT DATE: December 16, 1993
DATE SAMPLED: December 14, 1993
DATE RECEIVED: December 14, 1993
ANALYSIS DATE: December 15, 1993

PROJECT CODE: GIRB1542
REF #: 55,077
STATION: MW-4
TIME SAMPLED: 9:40
SAMPLER: L.T. Reed

Parameter	Detection Limit (ug/L)	Concentration (ug/L)
Dichlorodifluoromethane	10	ND'
Chloromethane	10	ND
Vinyl Chloride	10	ND
Bromomethane	5	ND
Chloroethane	5	ND
Trichlorofluoromethane	2	ND
Acetone	50	ND
1,1-Dichloroethene	2	ND
Methylene Chloride	20	ND
Carbon Disulfide	7	ND
MTBE	3	ND
trans-1,2-Dichloroethene	2	ND
1,1-Dichloroethane	2	ND
2-Butanone	20	ND
Chloroform	10	ND
1,1,1-Trichloroethane	1	ND
Carbon Tetrachloride	1	ND
1,2-Dichloroethene	1	ND
Benzene	1	12.7
Trichloroethene	1	ND
12-Dichloropropane	1	ND
Bromodichloromethane	1	ND

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REF #: 55,077

Parameter	Detection Limit (ug/L)	Concentration (ug/L)
4-Methyl-2-Pentanone	10	ND
cis-1,3-Dichloropropene	1	ND
Toluene	2	30.7
trans-1,3-Dichloropropene	1	ND
1,1,2-Trichloroethane	2	ND
2-Hexanone	10	ND
Tetrachloroethene	2	ND
Dibromochloromethane	2	ND
Chlorobenzene	2	ND
Ethyl Benzene	1	27.1
Total Xylenes	3	241.
Styrene	1	ND
Bromoform	5	ND
1,1,2,2-Tetrachloroethane	1	ND
1,3 Dichlorobenzene	2	ND
1,4 Dichlorobenzene	2	ND
1,2 Dichlorobenzene	2	ND

NUMBER OF UNIDENTIFIED PEAKS: >10

ANALYTICAL SURROGATE RECOVERY:

1,2-Dichloroethene-d4:	110.%
Toluene-d8:	106.%
4-Bromofluorobenzene:	90.%

Notes:

1 None detected

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Laboratory Services

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LABORATORY REPORT

EPA METHOD 8240 WATER MATRIX

CLIENT: Griffin International
PROJECT NAME: Rossi Buick
REPORT DATE: December 16, 1993
DATE SAMPLED: December 14, 1993
DATE RECEIVED: December 14, 1993
ANALYSIS DATE: December 15, 1993

PROJECT CODE: GIRB1542
REF #: 55,078
STATION: MW-5
TIME SAMPLED: 10:10
SAMPLER: L.T. Reed

Parameter	Detection Limit (ug/L)	Concentration (ug/L)
Dichlorodifluoromethane	10	ND[1]
Chloromethane	10	ND
Vinyl Chloride	10	ND
Bromomethane	5	ND
Chloroethane	5	ND
Trichlorofluoromethane	2	ND
Acetone	50	ND
1,1-Dichloroethene	2	ND
Methylene Chloride	20	ND
Carbon Disulfide	7	ND
MTBE	3	3.9
trans-1,2-Dichloroethene	2	ND
1,1-Dichloroethane	2	ND
2-Butanone	20	ND
Chloroform	10	ND
1,1,1-Trichloroethane	1	ND
Carbon Tetrachloride	1	ND
1,2-Dichloroethene	1	ND
Benzene	1	68.8
Trichloroethene	1	ND
12-Dichloropropane	1	ND
Bromodichloromethane	1	ND

ENDYNE, INC.

Laboratory Services

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REF #: 55,078

Parameter	Detection Limit (ug/L)	Concentration (ug/L)
4-Methyl-2-Pentanone	10	ND
cis-1,3-Dichloropropene	1	ND
Toluene	2	2.7
trans-1,3-Dichloropropene	1	ND
1,1,2-Trichloroethane	2	ND
2-Hexanone	10	ND
Tetrachloroethene	2	ND
Dibromochloromethane	2	ND
Chlorobenzene	2	ND
Ethyl Benzene	1	215.
Total Xylenes	3	256.
Styrene	1	ND
Bromoform	5	ND
1,1,2,2-Tetrachloroethane	1	ND
1,3 Dichlorobenzene	2	ND
1,4 Dichlorobenzene	2	ND
1,2 Dichlorobenzene	2	ND

NUMBER OF UNIDENTIFIED PEAKS: >10

ANALYTICAL SURROGATE RECOVERY:

1,2-Dichloroethene-d4:	98.%
Toluene-d8:	107.%
4-Bromofluorobenzene:	88.%

Notes:

1 None detected

Due 12/16/93
A.M.

008462

ENDYNE, INC.

32 James Brown Drive
Williston, Vermont 05495
(802) 879-4333

CHAIN-OF-CUSTODY RECORD

2-Day Rush

Project Name: Rossi Buick #993547 Site Location: Berlin, VT	Reporting Address: 2B Dorset LN, Williston, VT	Billing Address: Same
Endyne Project Number: G,RB1542	Company: Griffin Int. 879-7708 Contact Name/Phone #: Laurie Read	Sampler Name: L.T. Read Phone #: 879-7708

Lab #	Sample Location	Matrix	GRAB	COMP	Date/Time	Sample Containers No.	Sample Containers Type/Size	Field Results/Remarks	Analysis Required	Sample Preservation	Rush
55,077	MW4		✓		14Dec93/9:40	2	gls/40ml		EPA 8240	HCl	YES
55,078	MW5		✓		14Dec93/10:10	2	gls/40ml		EPA 8240	HCl	YES

RUSH!

Relinquished by: Signature: Laurie T. Read	Received by: Signature: Jon Witmer	Date/Time: 12/1/93 11:32 Am
Relinquished by: Signature	Received by: Signature	Date/Time

Requested Analyses

1	pH	6	TKN	11	Total Solids	16	Metals (Specify)	21	EPA 624	26	EPA 8270 B/N or Acid
2	Chloride	7	Total P	12	TSS	17	Coliform (Specify)	22	EPA 625 B/N or A	27	EPA 8010/8020
3	Ammonia N	8	Total Diss. P	13	TDS	18	COD	23	EPA 418.1	28	EPA 8080 Pest/PCB
4	Nitrite N	9	BOD_5	14	Turbidity	19	BTEX	24	EPA 608 Pest/PCB		
5	Nitrate N	10	Alkalinity	15	Conductivity	20	EPA 601/602	25	EPA 8240		
29	TCLP (Specify: volatiles, semi-volatiles, metals, pesticides, herbicides)										
30	Other (Specify):										